

CLAIMS

1. A method for ensuring the reliability of technical components, especially of internal combustion engines and the parts thereof, by means of a test program, comprising the following steps:
 - a) selection of at least one critical component and at least one critical damage mode;
 - b) definition of a reliability goal for each critical component;
 - c) selection of at least one test procedure for each critical component;
 - d) allocation of a test duration and/or test length for each test procedure;
 - e) allocation of acceleration factors in connection with the individual components and test procedures;
 - f) determination of an equivalent test duration and/or test length for the critical component and the respective test by means of acceleration factors and test duration or test length;
 - g) calculation of the verifiable reliability for the critical component on the basis of the chosen test procedure.
2. A method especially according to claim 1, characterized in that deterioration models are prepared for the critical components and damaging modes, and the acceleration factors are prepared on the basis of the deterioration models.
3. A method especially according to claim 2, characterized in that the preparation of the damage models contains the step of comparing the duration until the occurrence of a damaging in practical use with the duration until the occurrence of the same damaging in the test.
4. A method especially according to one of the claims 1 to 3, characterized by the following steps:

- h) comparison of the verifiable reliability with the reliability goal;
 - i) modification of the test program when verifiable reliability departs from the reliability goal and the departure is larger than a predefined tolerance quantity.
5. A method especially according to claim 4, characterized in that at least one test procedure is modified when the verifiable reliability lies beneath the reliability goal.
6. A method especially according to claim 4 or 5, characterized in that the steps c) through i) are repeated until the verifiable reliability corresponds at least to the reliability goal.
7. A method especially according to one of the claims 1 to 6, with a service life goal being predefined for the critical component, characterized by the following steps:
- j) comparison of the equivalent test duration and/or test length with the service life goal;
 - k) modification of the test program when verifiable equivalent test duration and/or test length departs from the service life goal and the departure is larger than a predefined tolerance quantity.
8. A method especially according to claim 7, characterized in that at least one test procedure is modified when the equivalent test duration and/or test length lies beneath the service life goal.
9. A method especially according to claim 7 or 8, characterized in that at least the steps c) to g), j) and k) are repeated until the equivalent test duration and/or test length corresponds at least to the service life goal.
10. A method especially according to one of the claims 1 to 9, characterized in that the results of the individual tests are represented as a load matrix for the individual components or are saved to a database.